Notice of Allowability	Application No.	Applicant(s)	
	10/649,755	GUICHARD ET AL.	
	Examiner	Art Unit	
	Ellen C. Tran	2134	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *20 December 2007*.

2. ☒ The allowed claim(s) is/are *1-21,23-31,33-41 and 43-57*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

 * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

 Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *4 Jan. 2008* .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Ellen Tran
ELLEN TRAN
PATENT EXAMINER
ART 2134

DETAILED ACTION

1. In response to amendment filed on 20 December 2007 and Examiner Initiated Interview on 4 January 2008. Claims 1, 2, 4, 8, 9, 11, 12, 14, 18, 19, 21, 23, 24, 26-28, 31, 33, 34, 36-38, 41-47, 49, and 56, are amended. Claims 22, 32, and 42 are canceled. Claims 52-57 are new. Amendments to the claims are accepted.

2. An examiner's amendment to the record is attached. Please enter entire claim set. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee. The examiner's amendment was authorized by attorney of record Paul P. Kriz in a phone interview on 4 January 2008 which was confirmed by an email.

Response to Arguments

3. Applicant's arguments filed 20 December 2007 have been fully considered and they are persuasive.

Allowable Subject Matter

4. Claims 1-21, 23-31, 33-41, and 43-57 are allowed.

Conclusion

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ellen C Tran whose telephone number is (571) 272-3842. The examiner can normally be reached from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kambiz Zand can be reached on (571) 272-3811. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ellen Tran

Ellen. Tran
Patent Examiner
Technology Center 2134
5 January 2008

Examiner's Amendment

This listing of the claims will replace all prior versions and listings of the claims in the application:

Listing of Claims:

1. (Previously Presented) In a first node of a physical network supporting multiple virtual network connections, a method to dynamically modify configuration data supporting virtual networks, the method comprising:

receiving i) destination network address information associated with at least one host computer, and ii) a corresponding gateway identifier of a gateway in the physical network, the gateway being an ingress edge node of the physical network through which the at least one host computer communicates;

generating a notification message including the destination network address information and the corresponding gateway identifier; and

transmitting the notification message to a second node of the physical network enabling the second node to create a mapping between the at least one host computer and a virtual network connection between the second node and the first node on which to forward data messages from the second node through the gateway to the at least one host computer based on identifying, as specified by the mapping, that the data messages having the destination network address information are to be mapped to and sent over the virtual network connection to the at least one host computer through the gateway as specified by the corresponding gateway identifier.

2. (Previously Presented) A method as in claim 1, wherein generating a notification message further comprises:

generating at least a portion of the notification message in accordance with a distribution protocol utilized by service providers to disseminate routing policy information to customer edge nodes; and

wherein transmitting a notification message includes:

transmitting the destination network address information and the corresponding gateway identifier as an appendix to the notification message.

3. (Original) A method as in claim 2, wherein the distribution protocol is based at least in part on an interautonomous system routing protocol and the virtual network connection between the second node and the first node is a virtual private network connection overlaid on the physical network, one end of the virtual private network connection terminating at the gateway identified by the corresponding gateway identifier.

4. (Previously Presented) A method as in claim 1 further comprising:

transmitting routing policy attribute information in addition to the destination network address information and corresponding gateway identifier to the second node to more particularly define a policy for routing the data messages on a corresponding virtual network connection through the gateway to the at least one host computer.

5. (Original) A method as in claim 1, wherein the first and the second nodes are part of a network that does not inherently support encryption services and configuration data at the second node at least partially supports encryption of data messages forwarded to the at least one host computer through the gateway identified by the corresponding gateway identifier.

6. (Original) A method as in claim 1, wherein transmitting the network address and identifier includes:

delivering the notification message including the network address and corresponding gateway identifier to multiple customer edge nodes of the physical network, each customer edge node updating its corresponding configuration data

for establishing private networks between the customer edge nodes based on the network address and corresponding gateway identifier.

7. (Original) A method as in claim 1, wherein the first and second nodes are customer edge nodes in a network and the network supports virtual private networks terminating at the customer edge nodes.

8. (Previously Presented) A method as in claim 1, wherein the destination network address information identifies a single host computer.

9. (Previously Presented) A method as in claim 1, wherein the destination network address information identifies a range of host computers that are part of a network coupled to the first node.

10. (Original) A method as in claim 1, wherein the corresponding gateway identifier is an IPsec identity associated with the at least one host computer.

11. (Previously Presented) A computer system at a first node of a physical network that at least partially supports a virtual network connection, the computer system comprising:

a processor;

a memory unit that stores instructions associated with an application executed by the processor;

a communication interface that supports communication with other nodes of the physical network; and

an interconnect coupling the processor, the memory unit, and the communication interface, enabling the computer system to execute the application and perform operations of:

receiving i) destination network address information associated with at least one host computer, and ii) a corresponding gateway identifier of a gateway in the physical network;

generating a notification message including the destination network address information and the corresponding gateway identifier; and

transmitting the notification message including the destination network address information and the corresponding gateway identifier to a second node of the physical network enabling the second node to establish a virtual network connection between the second node and the first node on which to forward data messages to the at least one host computer based on the corresponding gateway identifier.

12. (Previously Presented) A computer system as in claim 11 that, when generating a notification message and respectively transmitting a notification message, further performs operations of:

generating at least a portion of the notification message in accordance with a distribution protocol utilized by service providers to disseminate routing policy information to customer edge nodes; and

transmitting the destination network address information and the corresponding gateway identifier as an appendix to the notification message.

13. (Original) A computer system as in claim 12, wherein the distribution protocol is based at least in part on an interautonomous system routing protocol and the virtual network connection between the second node and the first node is a virtual private network connection overlaid on the physical network, one end of the virtual private network connection terminating at the gateway identified by the corresponding gateway identifier.

14. (Previously Presented) A computer system as in claim 11 that further performs an operation of:

transmitting routing policy attribute information in addition to the destination network address information and corresponding gateway identifier to the second node to more particularly define a policy for routing the data messages on a corresponding virtual network connection through the gateway to the at least one host computer.

15. (Original) A computer system as in claim 11, wherein the first and the second nodes are part of a network that does not inherently support encryption services and configuration data at the second node at least partially supports encryption of data messages forwarded to at least one host computer through the gateway identified by the corresponding gateway identifier.

16. (Original) A computer system as in claim 11 that, when transmitting the network address and identifier, further performs operations of :

delivering the notification message including the network address and corresponding gateway identifier to multiple customer edge nodes of the physical network, each customer edge node updating its corresponding configuration data for establishing private networks between the customer edge nodes based on the network address and corresponding gateway identifier.

17. (Original) A computer system as in claim 11, wherein the first and second nodes are customer edge nodes in a network configured according to Request For Comment 2547 and the network supports virtual private networks terminating at the customer edge nodes.

18. (Previously Presented) A computer system as in claim 11, wherein the destination network address information identifies a single host computer configured to receive data messages transmitted over the virtual network connection and through the first node from the second node.

19. (Currently Amended) A computer system as in claim 11, wherein the destination network address information identifies a range of host computers that are part of a network coupled to the first node.

20. (Original) A computer system as in claim 11, wherein the corresponding gateway identifier is a network address of the at least one host computer.

21. (Previously Presented) In a receiving node of a physical network supporting multiple virtual network connections, a method to dynamically modify configuration data associated with at least one of the multiple virtual network connections, the method comprising:

receiving a notification message from a sending node of the physical network, the notification message including destination network address information and a corresponding gateway identifier of a gateway of the physical network;

based on contents of the notification message, modifying a map at the receiving node to include the destination network address information, the corresponding gateway identifier, and configuration data identifying at least part of a virtual network connection between the receiving node and the sending node on which to forward data messages through the gateway to a destination node as specified by the destination network address information; and

upon forwarding data messages through the receiving node, utilizing the map to identify on which virtual network to forward the data messages from the receiving node through the gateway to the destination node based on the destination network address information associated with the destination node to which the data messages are directed.

22. (Canceled)

23. (Previously Presented) A method as in claim 21 further comprising:

at the receiving node including the map, receiving a data message to be forwarded based on a corresponding destination address;

comparing the destination address and a source address of the data message to destination network address information stored in the map;

identifying, based on the destination address, how to transmit the data message to the destination node based on a corresponding virtual network connection specified in the map.

24. (Previously Presented) A method as in claim 23 further comprising:

in response to identifying that the destination address of the data message matches destination network address information in the map, establishing the corresponding virtual network connection specified in the map on which to transmit the data message to the destination node.

25. (Original) A method as in claim 24, wherein establishing a virtual network connection includes establishing a virtual private network connection between the receiving node and sending node based on IKE (Internet Key Exchange) protocol and Ipsec (Internet Protocol Security).

26. (Previously Presented) A method as in claim 23 further comprising:

in response to identifying that the destination address of the data message matches destination network address information in the map, identifying whether a corresponding virtual network connection specified in the map has been established and, if so, transmitting the data message on the established virtual network connection to the destination node.

27. (Previously Presented) A method as in claim 21, wherein the destination network address information identifies a single host computer.

28. (Previously Presented) A method as in claim 21, wherein the destination network address information identifies a range of host computers that are part of a network coupled to the first node.

29. (Original) A method as in claim 21, wherein the corresponding gateway identifier is an IPsec identity associated with the at least one host computer.

30. (Original) A method as in claim 21, wherein the gateway is located in the sending node.

31. (Previously Presented) A computer system at a receiving node of a physical network that at least partially supports a virtual network connection, the computer system comprising:

a processor;

a memory unit that stores instructions associated with an application executed by the processor;

a communication interface that supports communication with other nodes of the physical network; and

an interconnect coupling the processor, the memory unit, and the communication interface, enabling the computer system to execute the application and perform operations of:

receiving a notification message from a sending node of the physical network, the notification message including destination network address information of a destination node and a corresponding gateway identifier of a gateway of the physical network;

based on contents of the notification message, modifying a map at the receiving node to include the destination network address information, the corresponding gateway identifier, and configuration data identifying at least part of a virtual network connection between the receiving node and the sending node on which to forward data messages through the

gateway to the destination node as specified by the destination network address information; and

utilizing the map to identify on which of multiple virtual network connections to forward the data messages from the receiving node through the gateway to the destination node based on the destination network address information associated with the destination node to which the data messages are directed to support forwarding of data messages through the receiving node.

32. (Canceled)

33. (Previously Presented) A computer system as in claim 31 that further performs operations of :

at the receiving node including the map, receiving a data message to be forwarded based on a corresponding destination address;

comparing the destination address and a source address of the data message to destination network address information stored in the map;

identifying, based on the destination address, how to transmit the data message to the destination node based on a corresponding virtual network connection specified in the map.

34. (Previously Presented) A computer system as in claim 33 that further performs operations of:

in response to identifying that the destination address of the data message matches destination network address information in the map, establishing the corresponding virtual network connection specified in the map on which to transmit the data message to the destination node.

35. (Original) A computer system as in claim 34, wherein establishing a virtual network connection includes establishing a virtual private network connection

between the receiving node and sending node based on IKE (Internet Key Exchange) protocol and Ipsec (Internet Protocol Security).

36. (Previously Presented) A computer system as in claim 33 that further performs operations of:

in response to identifying that the destination address of the data message matches destination network address information in the map, identifying whether a corresponding virtual network connection specified in the map has been established and, if so, transmitting the data message on the established virtual network connection to the destination node.

37. (Previously Presented) A computer system as in claim 31, wherein the destination network address information identifies a single host computer.

38. (Previously Presented) A computer system as in claim 31, wherein the destination network address information identifies a range of host computers that are part of a network coupled to the first node.

39. (Original) A computer system as in claim 31, wherein the corresponding gateway identifier is a network address of the at least one host computer.

40. (Original) A computer system as in claim 31, wherein the gateway is located in the sending node.

41. (Previously Presented) A computer program product including a computer-readable medium having instructions stored thereon for processing data information, such that the instructions, when carried out by a processing device, enable the processing device to perform the steps of:

receiving i) destination network address information associated with at least one host computer, and ii) a corresponding gateway identifier of a gateway in the physical network;

generating a notification message including the destination network address information and the corresponding gateway identifier; and

transmitting the notification message to a second node of the physical network enabling the second node to establish a virtual network connection between the second node and the first node on which to forward data messages to the at least one host computer based on a mapping association, at the second node, between the destination network address information and the corresponding gateway identifier.

42. (Canceled)

43. (Previously Presented) A computer program product including a computer-readable medium having instructions stored thereon for processing data information, such that the instructions, when carried out by a processing device, enable the processing device to perform the steps of:

receiving a notification message from a sending node of the physical network, the notification message including destination network address information and a corresponding gateway identifier of a gateway of the physical network;

based on contents of the notification message, modifying a map at the receiving node to include the destination network address information, the corresponding gateway identifier, and configuration data identifying at least part of a virtual network connection between the receiving node and the sending node on which to forward data messages through the gateway to a destination node as specified by the destination network address information; and

utilizing the map to identify on which virtual network to forward the data messages through the gateway to the destination node based on the destination

network address information associated with the destination node to which the data messages are directed to support forwarding of data messages through the receiving node.

44. (Previously Presented) A computer system at a receiving node of a physical network that at least partially supports a virtual network connection, the computer system comprising:

means for receiving a notification message from a sending node of the physical network, the notification message including destination network address information and a corresponding gateway identifier of a gateway of the physical network; and

means for modifying a map at the receiving node to include the destination network address information, the corresponding gateway identifier, and configuration data identifying at least part of a virtual network connection between the receiving node and the sending node on which to forward data messages through the gateway to a destination node as specified by the destination network address information; and

means for utilizing the map to identify on which virtual network to forward the data messages from the receiving node through the gateway to the destination node based on the destination network address information associated with the destination node to which the data messages are directed to support forwarding of data messages through the receiving node.

45. (Previously Presented) In a physical network supporting virtual private network connections terminating at customer edge routers coupled to a service provider network, a method comprising:

at a first customer edge router:

receiving a range of destination network addresses associated with host computers coupled to the first customer edge router;

in addition to receiving the range of destination network addresses, receiving a security gateway identifier associated with a second customer edge router of the service provider network;

generating and transmitting a notification message including the range of destination network addresses and the security gateway identifier to the second customer edge router; and

at the second customer edge router:

receiving the notification message;

based on contents of the notification message, generating a map to include the range of destination network addresses and a corresponding virtual private network connection between the second customer edge router and first customer edge router; and

prior to forwarding data messages through the second customer edge router to a computer having a destination network address in the range of destination network addresses, utilizing the map to identify on which virtual private network to forward the data messages.

46. (Previously Presented) A method as in claim 1 further comprising:

generating a map at the second node based on the destination network address information and the corresponding gateway identifier of the gateway for routing of messages destined for the at least one host computer via the gateway identifier, the second node supporting forwarding of the messages to the at least one host computer through the gateway as specified by the corresponding gateway identifier.

47. (Previously Presented) A method as in claim 2, wherein transmitting the notification message to the second node includes:

transmitting the notification message from a first customer edge node through a path including a service provider network to a second customer edge node, the second customer edge node configured to utilize the destination

network address information and the corresponding gateway identifier to create a map specifying the gateway in the physical network as specified by the corresponding gateway identifier on which to forward messages from the second customer edge node through the service provider network to the first customer edge node to the at least one host computer.

48. (Previously Presented) A method as in claim 47, wherein transmitting the notification message from the first customer edge node through the path including the service provider network to the second customer edge node includes:

transmitting the notification message to a first service provider edge router in the service provider network, the first service provider edge router configured to distribute the notification message to multiple other service provider edge routers in the service provider network.

49. (Currently Amended) A method as in claim 48, wherein each of the multiple other service provider edge routers in the service provider network is configured to identify which virtual private network the corresponding gateway identifier is associated with for purposes of advertising the destination network address information and the corresponding gateway identifier to appropriate customer edge nodes, a given provider edge router of the other service provider edge routers configured to receive the notification message from the first service provider edge router and forward the destination network address information and the corresponding gateway identifier to the second customer edge router.

50. (Previously Presented) A method as in claim 49, wherein the given service provider edge router is configured to determine a virtual private network to which the notification message pertains based on use of a route target extended community attribute.

51. (Previously Presented) A method as in claim 47 further comprising:

maintaining at least one encryption key in the map to enable the second customer edge node to identify how to encrypt information transmitted to the at least one host computer.

52. (Previously Presented) A computer system as in claim 31, wherein the virtual network connection between the receiving node and sending node is a first virtual network connection of the multiple virtual network connections on which to forward data from the receiving node through the sending node to the destination node;

wherein the destination node is a first destination host computer of multiple destination host computers to which the sending node serves as a pass-through node for forwarding data received from the receiving node;

wherein the notification message is a first notification message; and

wherein the corresponding gateway identifier is a first gateway identifier.

53. (Previously Presented) A computer system as in claim 52 further supporting operations of:

receiving a second notification message from the sending node of the physical network, the second notification message including destination network address information of a second destination node and a second gateway identifier of a second gateway of the physical network, the second destination node being a second destination host computer of the multiple destination host computers;

based on contents of the second notification message, modifying the map at the receiving node to include the second destination network address information, the second gateway identifier, and configuration data identifying at least part of a second virtual network connection between the receiving node and the sending node on which to forward data messages through the second

gateway to the second destination node as specified by the second destination network address information; and

utilizing the map to select the second virtual network connection of the multiple virtual networks to forward a given received data message from the receiving node through the gateway to the second destination node based on identifying that the given received data message includes a destination network address equivalent to the second destination network address information in the map.

54. (Previously Presented) A computer system as in claim 53, wherein the receiving node is a first customer edge router and the sending node is a second customer edge router in a service provider network; and wherein the first destination host computer and the second destination host computer reside external to the service provider network.

55. (Previously Presented) A method as in claim 21 further comprising:

based on receiving multiple notification messages from the sending node:

maintaining the map at the receiving node to include destination network address information for a first destination host computer and a first corresponding virtual network connection on which to forward data destined for the first destination host computer through the sending node to the first destination host computer; and

maintaining the map at the receiving node to include destination network address information for a second destination host computer and a second corresponding virtual network connection on which to forward data destined for the second destination host computer through the sending node to the second destination host computer.

56. (Currently Amended) A method as in claim [[54]] 55 further comprising:

receiving first data at the receiving node, the first data having a destination network address specifying the first destination host computer as a respective recipient to which the first data is directed;

utilizing the map to identify the first corresponding virtual network connection as a path on which to forward the first data to the first destination host computer from the receiving node over the first virtual network connection to the sending node for further transmission of the first data from the sending node to the first destination host computer;

receiving second data at the receiving node, the second data having a destination network address specifying the second destination host computer as a respective recipient to which the second data is directed; and

utilizing the map to identify the second corresponding virtual network connection as a path on which to forward the second data to the second destination host computer from the receiving node over the second virtual network connection to the sending node for further transmission of the second data from the sending node to the second destination host computer.

57. (Previously Presented) A method as in as in claim 56, wherein the receiving node is a first customer edge router and the sending node is a second customer edge router of a service provider network; and

wherein the first destination host computer and the second destination host computer reside external to the service provider network.

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